Rule driven workflow enactment

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Subject

- Last year we presented Artis: a system for model driven development and deployment
- In Artis, workflow is driven by the information need
- Data models and business rules can be used to specify the information need
- In this presentation we explain how we realized workflow enactment by comparing database content with business rules

Workflow enactment

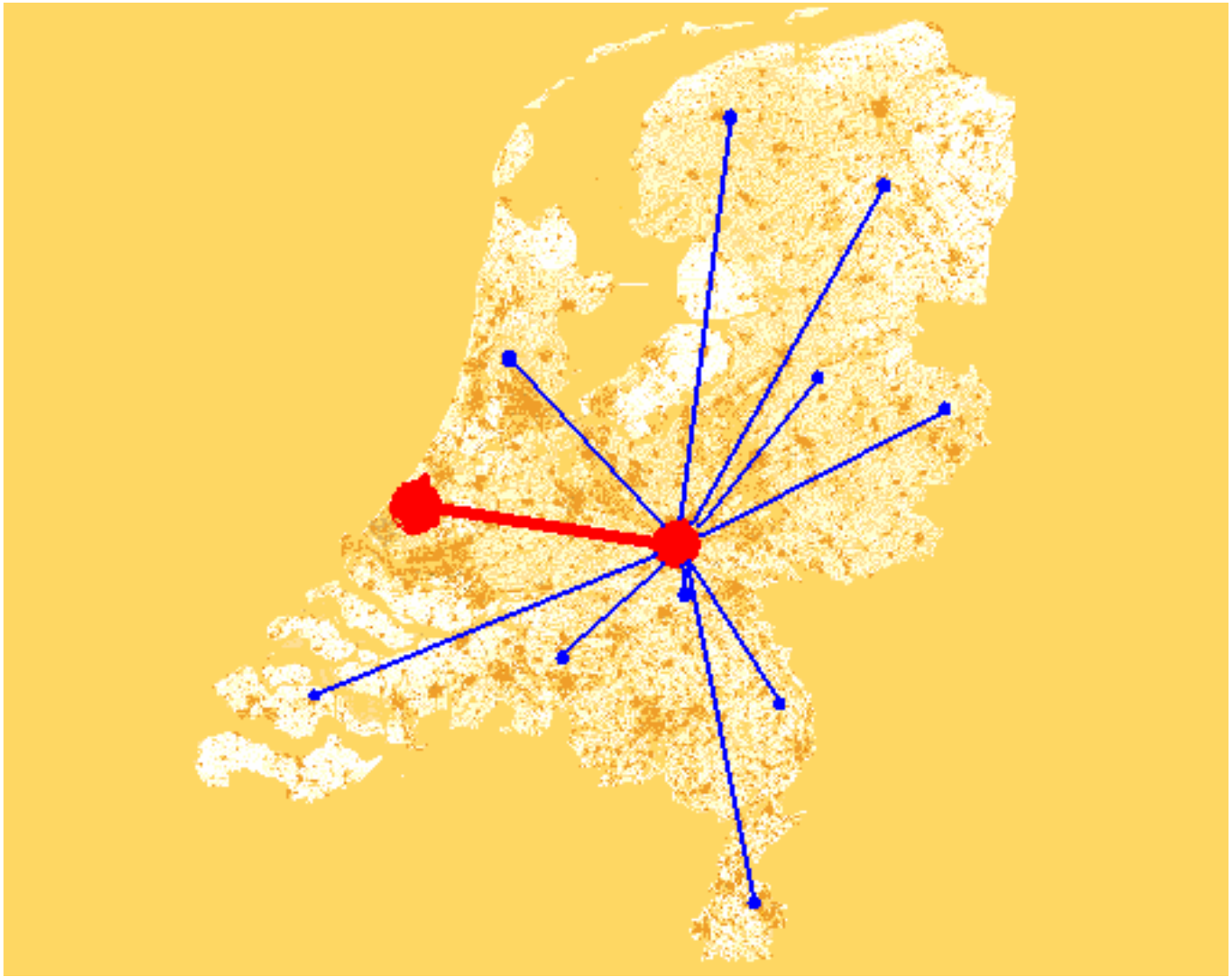
Rule violation entered into workload for responsible employee

Enact procedure

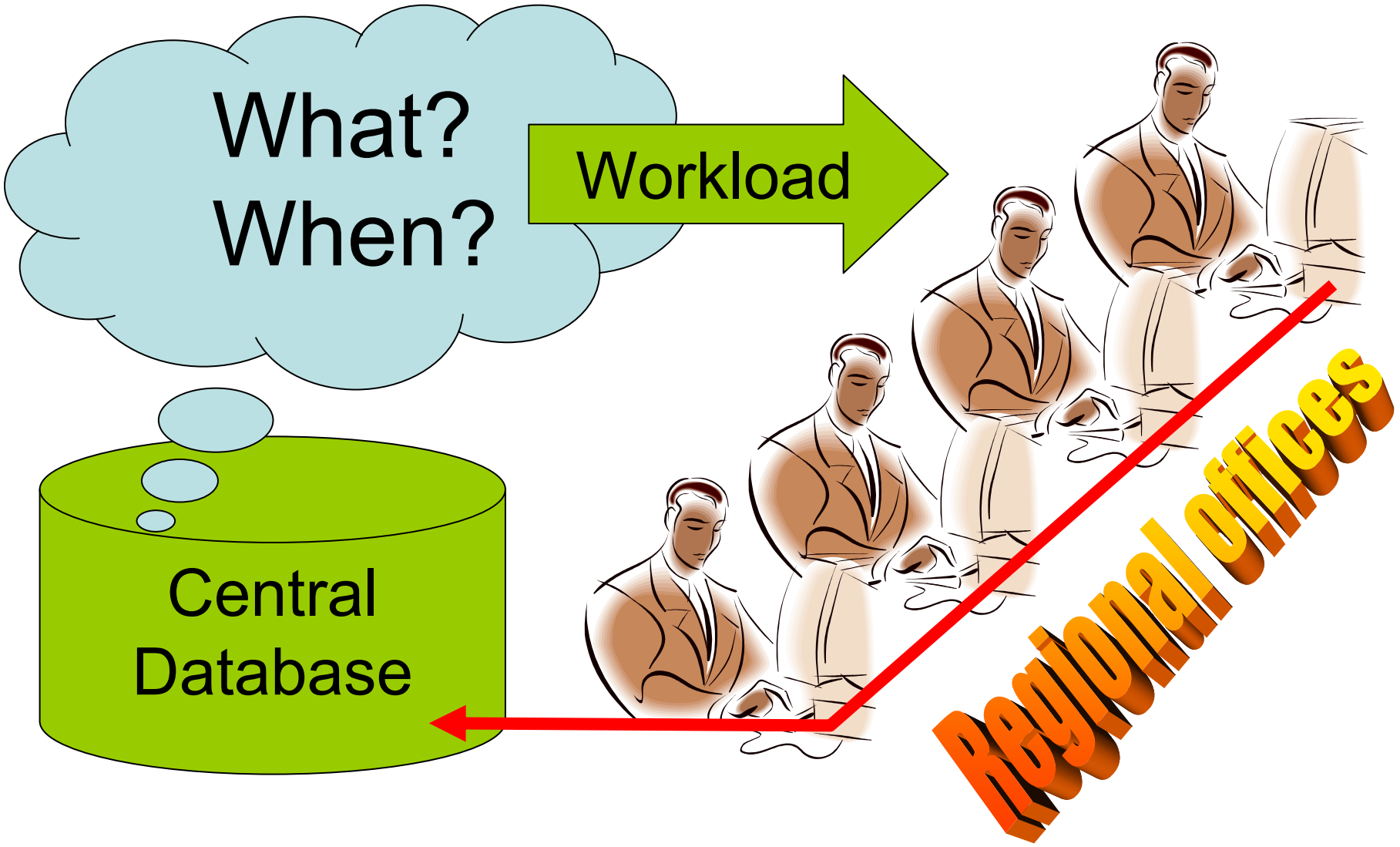
Information need

In our case: farming

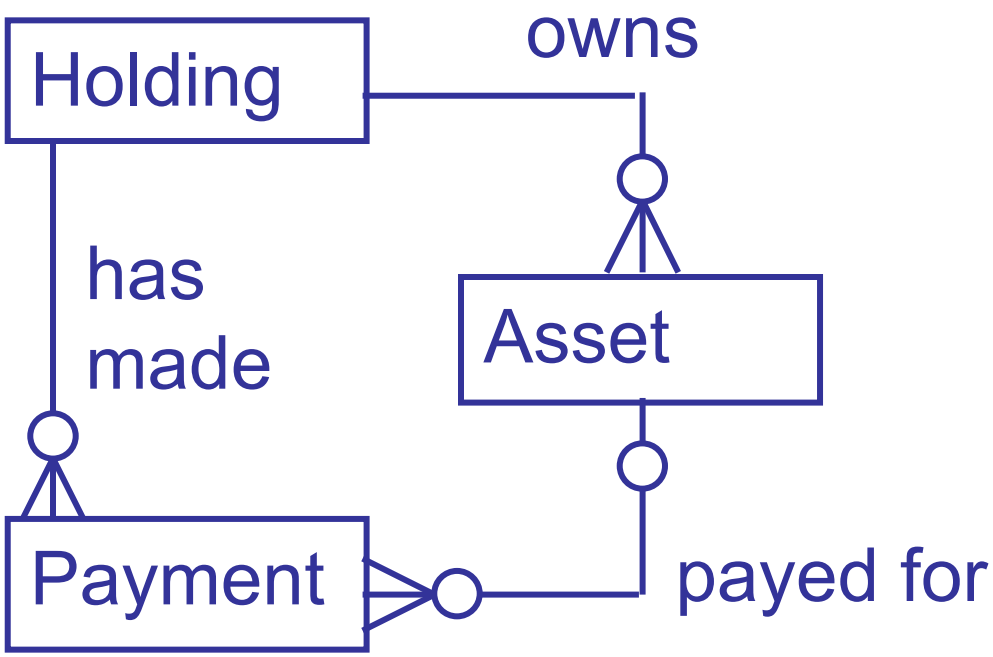
Regional offices



Information need drives workflow



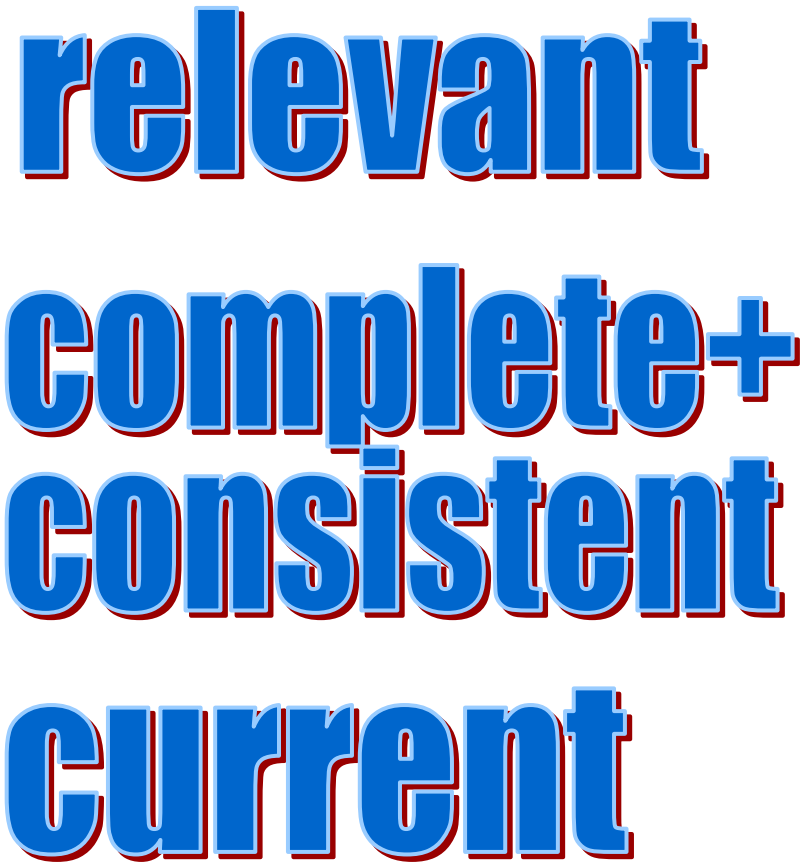
Information need can be represented as a data structure model, for instance (attributes not shown):



Demo: an artis data model (context)

Data model is not sufficient to define the information need

- We do not need to know all attribute values in all cases
- We want the data to satisfy integrity constraints
- We need the information in time



Attach rules to each attribute

relevant → Relevance rule

complete+ consistent → Integrity rule

current → Actuality rule

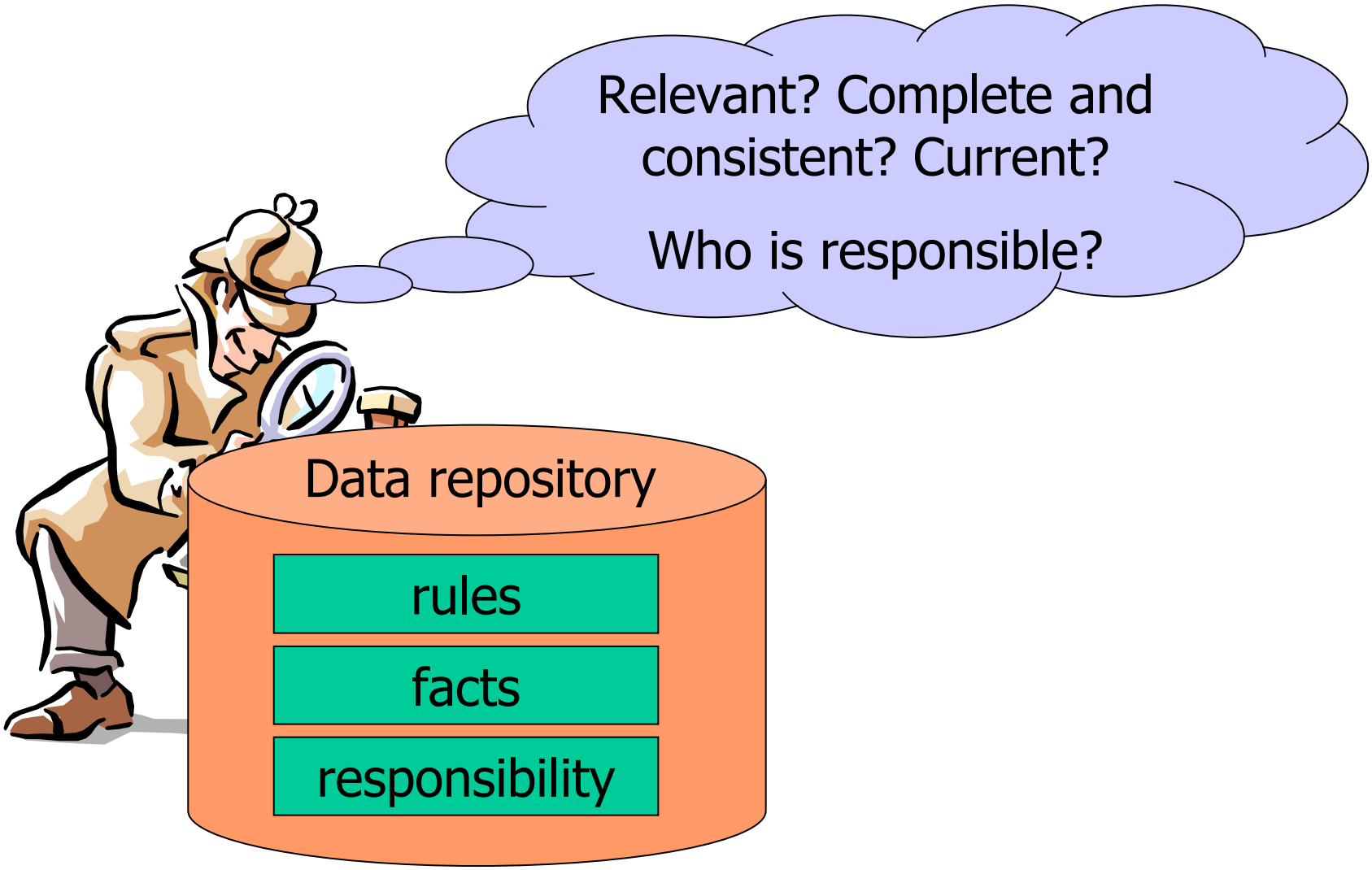
Demo: RIA rule formulation and representation

Act in case of rule violations

Who is responsible?

What should she do?

Keeper determines workload



Keeper algorithm

- for each entity in some designated population as a starting point:
  - for each attribute:
    - determine responsible employee and add rule violation to the workload:
      - if the attribute is relevant and the value is not current
      - or if the attribute is relevant and the value is current but does not satisfy the integrity constraint

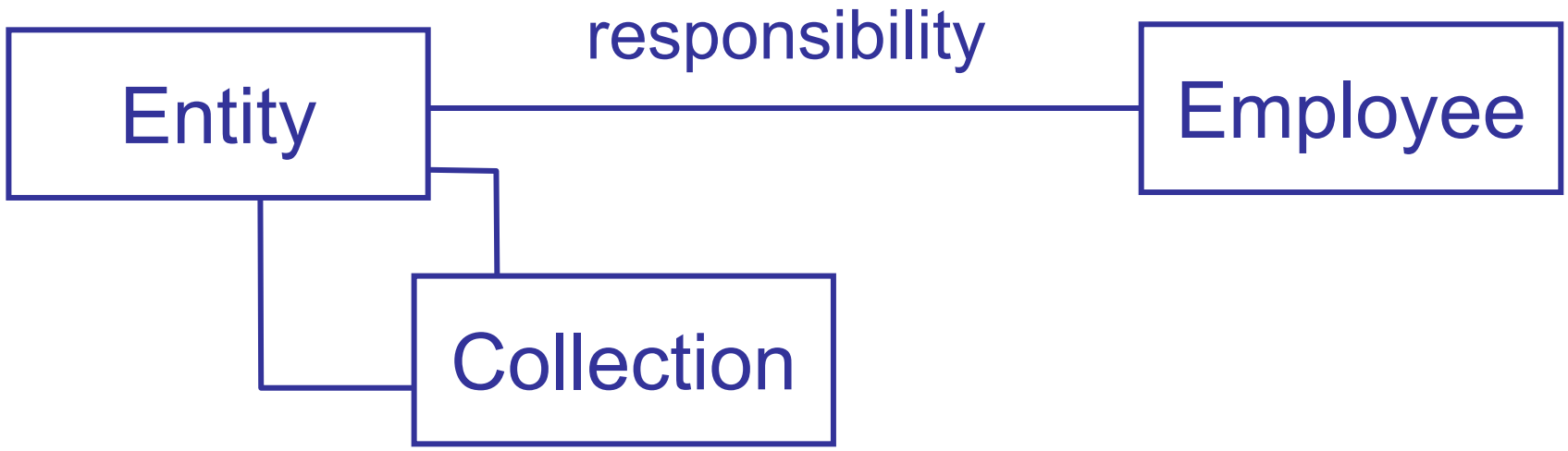
Two remarks

1. Attributes may be multi-valued (have a collection of entities as value). In that case, execute the keeper algorithm for all entities in the collection too.
2. Evaluation of actuality rules requires a temporal data representation. We represent the value of facts not as a simple value but as a pair of value and validity time.

Demo: data representation (viewer)

Who is responsible?

- We record responsibility for entities in the repository as an entity-employee-association
- No need to designate responsibility for each entity. The keeper traces back to the entity in the population it used as starting point.



What shoud she do?

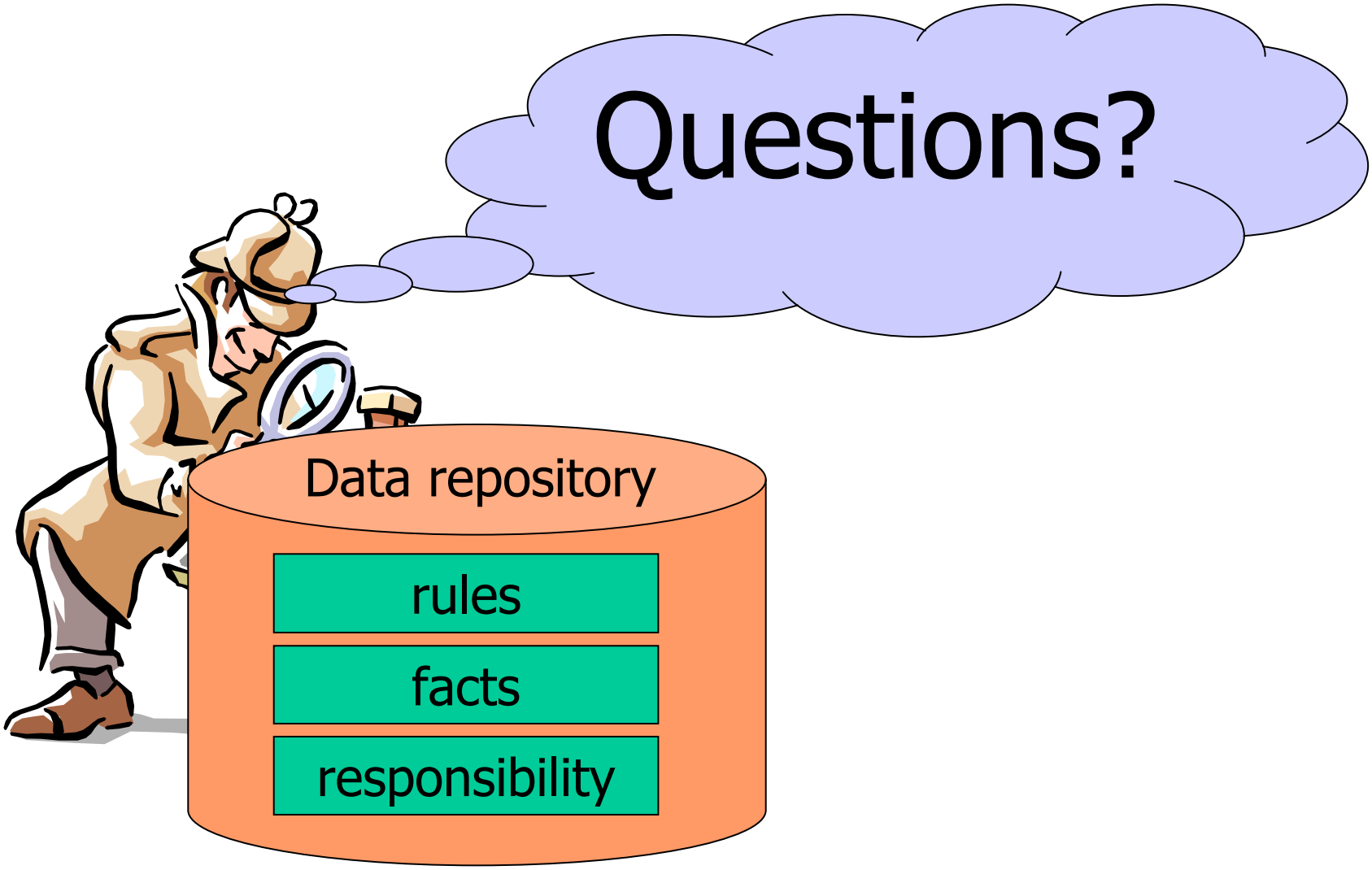
- The workflow is described in procedures
- We record applicability of procedures as an association of procedure and rule

- We use this knowledge to “enact” workflow: enter first task of procedure into responsible employees to-do list

Demo: workload (Mole) and start

Conclusion

- Workflow can be enacted by comparing database content with business rules
- This can only be generically achieved by applying a temporal data model
- We need knowledge about:
  - responsibility (of persons)
  - applicability (of procedures)


Questions?
Data repository
rules
facts
responsibility